

## **DECORATIVE STRUCTURE AND CEILING SYSTEM**

### **CROSS REFERENCE TO RELATED APPLICATIONS**

**[0001]** This application claims the benefit of international application serial no. PCT/US02/22947, filed on July 19, 2002, designating the United States and published in English, which claims the benefit under 35 U.S.C. §119(e) of U.S. provisional patent application serial no. 60/306,516, filed on July 19, 2001.

### **BACKGROUND**

**[0002]** The present invention relates generally to a decorative structure and more particularly to structures suspended from a ceiling.

**[0003]** Traditional suspended ceiling systems formed from suspended grids of acoustically absorbent tiles are commonly found in commercial work spaces such as professional offices. While such systems provide a pleasant and acoustically absorbent space, designers and architects who desire to create the feel of an open loft space often object to the uniformity and lowered ceiling height created by conventional drop ceilings. Thus, more and more businesses are opting for so-called open plenum ceiling designs. In the open plenum, no suspended ceiling is provided. Rather, the hard deck or hard ceiling of the building along with the HVAC duct work, wiring and the like are exposed. Open plenum ceilings are more commonly found in retail stores and similar commercial settings, but also can be found in office spaces.

**[0004]** In attempting to further define a space within the open plenum layout, many designers use reconfigurable partitions that may be considerably lower than the hard ceiling. Furthermore, depending upon the structure of an in-door space, an open plenum design,

combined with a lack of interior walls, tend to leave the space unstructured and less useful and aesthetically unpleasing.

[0005] To differentiate a space and to create a more interesting visual in a loft style space or open plenum design, architects will specify that an open loft space be broken up by customized decorative structures suspended from the ceiling to differentiate the space within the room. Furthermore, such suspended structures are used to dampen extraneous noise while creating an interesting visual. Unfortunately, such decorative structures must be prefabricated into the desired shape specified before installation. Additionally, such prefabricated shapes are difficult to ship or mass produce. Further, such decorative structures tend to be customized pieces requiring considerable expense to fabricate.

#### SUMMARY

[0006] The present invention provides a decorative structure and system including a flexible ceiling panel maintained in a flexed configuration by a frame. The flexed configuration may be arranged in various configurations having different degrees of flex or curvature in the individual decorative structures. The system includes a flexible panel supported by a frame. The frame can be configured such that the flexible panel takes on a wave-like appearance which is imparted by the curved structure of the frame. Thus, a relatively flat flexible panel can be configured to create a curved decorative structure.

[0007] In greater detail, the decorative structure includes a first runner and a second runner element spaced substantially parallel to the first runner. The decorative structure also includes a spreader bar spaced between and connected to both the first and second runner. The flexible panel may then be attached to the runners using a clip. Typically, the flexible panel may then take on the shape or form of the runners. Thus, if the curvature or wave-like

form of the runners is imparted to the attached flexible panel. The decorative structure may then be suspended from ceiling.

[0008] Furthermore, the decorative structure may include a channel positioned within the first and second runners wherein the clip may be seated within the channel and engaged with the flexible panel. A modular spacing bar may be used to engage the channel positioned within the first and second runners to attach two adjacent decorative structures.

[0009] Additionally, a ceiling system is provided comprising a plurality of decorative structures suspended from a ceiling wherein the decorative structures comprise a frame, a panel and a clip attaching the panel to the frame. The ceiling system includes a modular spacer bar attached to and positioned between at least two adjacent decorative structures. Furthermore, the flexible panels may be comprised of a range of materials such as metal, wood, paper and plastic.

[0010] These and other features of the present invention will become apparent upon reading the following detailed description, when taken in conjunction with the accompanying drawings that are briefly described as follows.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Fig.1 is a prospective view of a decorative structure illustrating the clip attached to the runner and holding the flexible panel;

[0012] Fig. 2 is a prospective view of the slotted member attached to the runner and the spreader bar attached to the runner by the slotted member;

[0013] Fig. 3 is a side view of the decorative article illustrating the spreader bar connecting the two opposed runners and the flexible panel attached to the runners by the clip;

[0014] Fig. 4 is a prospective view illustrating the spacer bar used to connect adjacent decorative articles;

[0015] Fig. 5 is a prospective view illustrating the decorative structure attached to the ceiling;  
and

[0016] Fig. 6 is a prospective view illustrating the decorative structure attached to both the ceiling and surrounding decorative structures.

#### DETAILED DESCRIPTION

[0017] The present invention provides for both a decorative structure and system for forming a flexible decorative structure. The decorative structure includes a flexible panel whose shape and form are essentially dictated by the frame holding the panel. Thus, most any material or panel may be used to form the decorative structure. Typical forms or shapes obtained by the decorative structure include waves or curves. Of course, the panel may also be flat.

[0018] In further detail, the decorative structure includes a first runner and a second runner. The runners 2 form the sides of the frame. The frame may consist of two or more runners and may take any shape such as a rectangle, as is illustrated the figures. For example, the frame may have two runners 2 along two opposite and parallel sides while the remaining two sides may or may not have a runner. Furthermore, the two sides may have an end cap attached which looks similar to the runners, giving the decorative structure a “finished look”. The runners 2 may be made of most any material such as steel or plastic.

[0019] The frame may also contain a spreader bar 8 spaced between and connected to both the first and second runner. The spreader bar 8 aids in providing support for the frame and may be used to provide an attachment point for the decorative structure to the ceiling above. Examples of acceptable spreader bars 8 include most bars that are used in most conventional drop ceiling installations.

[0020] The flexible panel 6 can be formed of most any material, and the system is designed to provide a designer with a wide selection of materials from which to work from. For example, materials such as wood, metal and fiber board may be used. Additionally, materials such as glass may also be used if a flat configuration is desired. Furthermore, the flexible panel 6 may be acoustically absorbent or have sound attenuating properties.

[0021] Typically, the shape of the flexible panel 6 is imparted to it by the runners 2 such that the panel 6 conforms to the contours of the runners 2. Thus, the curvature of the runners 2 determines the shape of the attached flexible panel 6. There are any number of combinations of runners 2 which will impart a desired look to the flexible panel 6. For example, the parallel runners 2 may have substantially the same curvature or parallel runners 2 of different curvature may be used to impart an undulating wave-like form to the flexible panel 6. The panels are typically attached to the runners using a clip 4. The decorative structure may include a channel positioned within the runners such that the clip 4 may be seated within the channel and engaged with the flexible panel 6. The clip 4 may take on any conventional form for attaching and securing the panel to the runners. Examples of clips 4 include those which pinch or clamp the panel to the runners 2.

[0022] The decorative structure may be suspended from ceiling by use of cables or posts 14 attached to the decorative structure. The cables or posts can be attached to the spreader bar 8 placed between and attached to the opposed runners 2. Various attachment mechanisms may be used to secure either the post or cable 14 to the spreader bar 8. Additionally, a modular spacing bar 12 may be used to space and connect the decorative structures together.

Typically, the modular spacing bar 12 engages the channel positioned within the runners 2 to attach two adjacent decorative structures.

[0023] The ceiling system encompasses a plurality of decorative structures suspended from a ceiling wherein the decorative structures comprise a frame, a panel and a clip attaching the

panel to the frame. The ceiling system includes a modular spacer bar 12 attached to and positioned between at least two adjacent decorative structures. Furthermore, the flexible panels 6 may be comprised of a range of materials such as metal, wood, paper, fiber board and plastic.

[0024] Referring now in greater detail to the figures, wherein like numerals refer to like parts throughout the drawings. In Figure 1 the runner 2 is shown having a channel positioned within the runner for attaching the clip 4. The clip 4 holds in place the panel 6 to the runner 2. In Figure 2 the spreader bar 8 is attached to the runner 2 through the use of the slotted member 10 which in turn is attached to the runner 2. Figure 3 illustrates a side view of the decorative structure showing the runner 2 connected to the slotted member 10 and the spreader bar 8 connecting the two parallel runners 2. Additionally illustrated is the panel 6 attached to the runners 2 by the clip 4.

[0025] In Figure 4 the spacing bar 12 is illustrated wherein the spacing bar 12 is connected the runner 2 via the channel. Figure 5 depicts the decorative structure suspended from the ceiling via cabling or bars 14. Figure 6 shows multiple decorative structures suspended from the ceiling and connected to each other by the spacing bar 12.